REMARKS

In response to the Office Action mailed August 28, 2003, Applicant respectfully requests reconsideration. To further the prosecution of this application, claims 1, 8-15, 21, 22, and 26-32 have been amended, and the application as presented is believed to be in condition for allowance.

In paragraph 1, the Office Action objected to the abstract of the disclosure, asserting that the phrase "is disclosed" should be deleted. The abstract has been amended accordingly. Therefore, it is respectfully requested that the objection to the abstract be withdrawn.

In paragraph 3, the Office Action rejected claims 1-32 under 35 U.S.C. §102(e) as purportedly being anticipated by Blumenau (U.S. Pub. No. 2002/0194294). Applicant respectfully disagrees with this rejection for reasons set forth below, and notes that, although not so identified on the front of the publication, Blumenau is commonly assigned with the present application to EMC corporation.

Blumenau is directed to virtual ports for partitioning of data storage. Blumenau discloses a cached storage subsystem 20 connected via a data network 21 to a plurality of hosts 22-25 (page 4, paragraph 0058, lines 1-3, Figure 1). The storage subsystem 20 includes storage volumes 26 and a storage controller 27 for controlling host accesses to the storage volumes (page 4, paragraph 0058, lines 4-6, Figure 1). The storage controller also includes port adapters that receive access requests to the storage volumes from the hosts (page 4, paragraph 0059, lines 1-3). Blumenau discloses that in a Fibre Channel network, each of the ports is assigned a world wide name (WWN) that includes a unique identifier of the manufacturer of the device (page 5, paragraph 0070, lines 1-7). Further, each logical volume assigned to a port adapter is assigned a logical unit number (LUN) on that port adapter (page 5, paragraph 0069, lines 9-18). Blumenau discloses that each logical volume can be identified by a combination of the WWN and LUN (page 5, paragraph 0070, lines 1-7).

Claim 1

Claim 1 is directed to a method of accessing one of a plurality of logical volumes stored on at least one of a plurality of storage systems in an enterprise. The method comprises steps of: specifying an enterprise logical volume identifier (ELVID) for one of the plurality of

logical volumes that uniquely identifies the one of the plurality of logical volumes among the plurality of logical volumes, so that the ELVID can be used to access that one of the plurality of logical volumes on at least two of the plurality of storage systems; specifying a physical storage address for the one of the plurality of logical volumes; and verifying that the ELVID corresponds to the physical storage address.

Blumenau fails to disclose or suggest an enterprise logical volume identifier (ELVID) for a logical volume that can be used to access the logical volume on at least two storage systems in an enterprise, as recited in claim 1.

The Office Action asserts that the combination of the WWN and the LUN used in Blumenau to identify a logical volume is an ELVID (paragraph 3 of Office Action, *citing* page 4, paragraph 0060 of Blumenau). Although the combination of a WWN for a port adapter and a LUN for a logical volume may be unique due to the fact that the WWN includes a unique identifier of the manufacturer of the device, the resulting identifier is specific to the storage system that includes the port adapter whose WWN is used in the ID (Blumenau, page 5, paragraph 0070). Thus, the identifier is not independent of the particular port adapter and cannot be used to access the logical volume on any other storage system. For example, if a logical volume were moved to a new storage system, it could not be identified by the same WWN and LUN. This is because the WWN is specific to a single port in a Fiber Channel network (Blumenau, page 5, paragraph 0070). If the logical volume were moved to another port (e.g., on a different storage system), the logical volume could only be identified by the WWN of the new port (Blumenau, page 5, paragraph 0070). Thus, in Blumenau, moving a logical volume to a new storage system (or even to a new port) requires identifying the logical volume by a new WWN and LUN combination.

By contrast, the ELVID recited in claim 1 can be used to access the logical volume on at least two of the storage systems in an enterprise. Thus, if the logical volume were moved from one storage system to another, the logical volume could still be identified by the same ELVID.

Thus, claim 1 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 1 under 35 U.S.C. §102(e) should be withdrawn. Claims 2-14 depend from claim 1 and are patentable for at least the same reasons.

Claim 15

Claim 15 is directed to a method of accessing one of a plurality of logical volumes stored on at least one of a plurality of storage systems in an enterprise. The method comprises steps of: specifying an enterprise logical volume identifier (ELVID) for the one of the plurality of logical volumes; specifying a physical storage address for the logical volume; and using the ELVID to assure that an entity requesting access to the one of the plurality of logical volumes is authorized to do so, the ELVID uniquely identifying the one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying a logical volume among the plurality of logical volumes in an enterprise and being usable to access the logical volume on at least two storage systems, as recited in claim 15.

Thus, claim 15 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 15 under 35 U.S.C. §102(e) should be withdrawn. Claims 16-25 depend from claim 15 and are patentable for at least the same reasons discussed above in connection with claim 15.

Claim 26

Claim 26 is directed to a host computer, comprising: a processing unit; and an enterprise logical volume identifier (ELVID) interface module to transmit an access request for at least one of a plurality of logical volumes, the access request including an ELVID for the at least one of the plurality of logical volumes and a respective physical storage location on one of a plurality of storage systems, the ELVID uniquely identifying the one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying one of the plurality of logical volumes among a plurality of logical volumes and being usable to access the one of the plurality of logical volumes on at least two storage systems, as recited in claim 26.

Thus, claim 26 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 26 under 35 U.S.C. §102(e) should be withdrawn.

Claim 27

Claim 27 is directed to a storage system, for use in an enterprise comprising a plurality of storage systems coupled by a network, the plurality of storage systems to store a plurality of logical volumes. The storage system comprises: a storage medium to store data corresponding to the plurality of logical volumes; and an enterprise logical volume identifier (ELVID) verifier module to verify that an access request to a physical storage location on the storage medium is directed to a correct one of the plurality of logical volumes as identified by an ELVID, the ELVID uniquely identifying the correct one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the correct one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying the correct one of a plurality of logical volumes among the plurality of logical volumes in an enterprise and being usable to access the one of the plurality of logical volumes on at least two storage systems, as recited in claim 27.

Thus, claim 27 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 27 under 35 U.S.C. §102(e) should be withdrawn. Claim 28 depends from claim 27 and is patentable for at least the same reasons discussed above in connection with claim 27.

Claim 29

Claim 29 is directed to a storage system for use in an enterprise comprising a plurality of storage systems coupled by a network, the plurality of storage systems storing a plurality of logical volumes. The storage system comprises: a storage medium to store data corresponding

to the plurality of logical volumes; and an enterprise logical volume identifier (ELVID) authorization module to verify that an access request to a physical storage location on the storage medium is received from an entity permitted to access one of the plurality of logical volumes with a corresponding ELVID, the ELVID uniquely identifying the one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying one of the plurality of logical volumes in an enterprise and being usable to access the one of the plurality of logical volumes on at least two of the plurality of storage systems, as recited in claim 29.

Thus, claim 29 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 29 under 35 U.S.C. §102(e) should be withdrawn. Claim 30 depends from claim 29 and is patentable for at least the same reasons discussed above in connection with claim 29.

Claim 31

Claim 31 is directed to a computer system comprising: at least one host computer; a plurality of storage systems that store a plurality of logical volumes; and means for associating enterprise logical volume identifiers (ELVIDs) with requests for access to the plurality of logical volumes; and means for verifying that access requests to physical storage locations are made to an appropriate one of the plurality of logical volumes identified by a respective ELVID, the ELVID uniquely identifying the appropriate one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the appropriate one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying one of a plurality of logical volumes and being usable to access the appropriate one of the plurality of logical volumes on at least two of the plurality of storage elements, as recited in claim 31.

Thus, claim 31 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 31 under 35 U.S.C. §102(e) should be withdrawn.

Claim 32

Claim 32 is directed to a computer system comprising: at least one host computer; a plurality of storage systems that store a plurality of logical volumes; and means for verifying that access requests to the plurality of logical volumes using an associated enterprise logical volume identifier (ELVID) are made by an entity authorized to access a requested one of the plurality of logical volumes, the ELVID uniquely identifying the requested one of the plurality of logical volumes among the plurality of logical volumes and being usable to access the requested one of the plurality of logical volumes on at least two of the plurality of storage systems.

As should be clear from the discussion above, Blumenau fails to disclose or suggest an ELVID uniquely identifying one of a plurality of logical volumes and being usable to access the requested one of the plurality of logical volumes on at least two of the plurality of storage elements, as recited in claim 32.

Thus, claim 32 patentably distinguishes over Blumenau. Accordingly, the rejection of claim 32 under 35 U.S.C. §102(e) should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
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